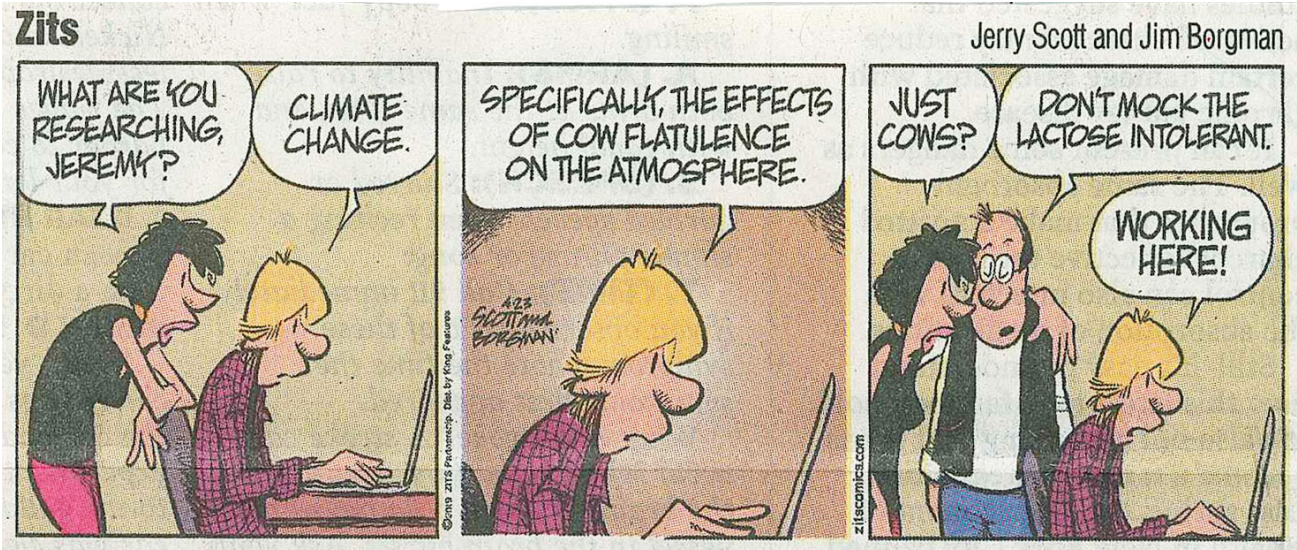


Arch 463
Fall 2019

Name _____

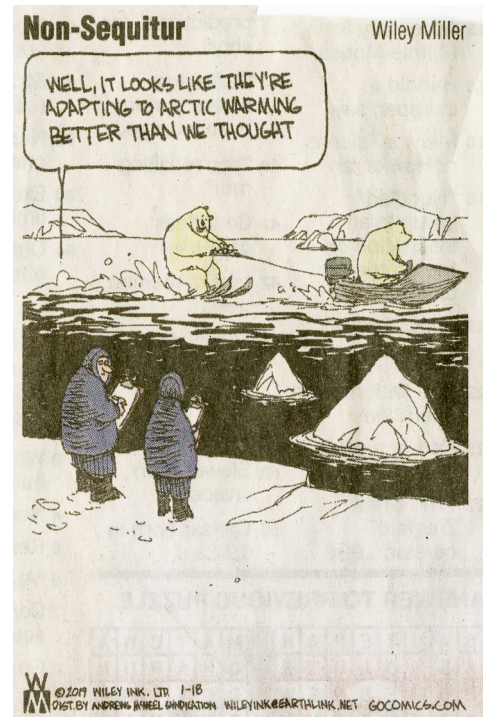
Midterm II

30 Multiple Choice Questions



- The ideal resident of BedZED is
 - one that lives with a one-earth carbon footprint
 - one who wears sweaters in the winter
 - one who produces no solid waste
 - none of the above
- BedZED is an exemplary high performance development because it features
 - a living machine
 - a combined heat and power system
 - robust passive design for heating and cooling
 - all of the above
- Rogers' Chiswick Park has large overhang shading devices at roof level that
 - block direct solar radiation
 - provide reflected daylight
 - avoid trapping hot air beneath them
 - all of the above
- The central pedestrian-friendly zone at Chiswick Park is important because
 - it collects rain water run-off
 - it is programmed for community events
 - it provides vital green space
 - all of the above

5. Built in phases, Chiswick Park's buildings
 - A. show improved shading strategies over time
 - B. are all identical
 - C. show improved heating strategies over time
 - D. none of the above
6. BedZED used thermal zoning during the design phase to
 - A. increase the density of occupation of the site
 - B. to provide direct south exposure to all residential units
 - C. to protect high internal load uses from solar gain
 - D. all of the above
7. The Wells Fargo (nee Farm Credit) Bank in Spokane is a successful example of thermal zoning to
 - A. provide daylight to all office areas
 - B. use unconditioned cores to buffer east and west sun
 - C. reduce first and operating costs for the building
 - D. all of the above
8. The balance point temperature occurs when the outdoor temperature
 - A. is in the comfort zone
 - B. causes heat losses to equal heat gains
 - C. is below the comfort zone
 - D. is equal to the thermostat setting
9. Among the first to experiment with double skin façades
 - A. was Le Corbusier
 - B. were the Scandinavians
 - C. was Arup's façade group
 - D. none of the above
10. A successful double façade can
 - A. contain operable shading
 - B. expanded steel mesh maintenance walkways
 - C. be open to the exterior
 - D. all of the above
11. Double façades are
 - A. most prevalent in multistory buildings
 - B. solely composed of glazing units
 - C. only effective on south façades
 - D. all of the above
12. The HEED model of the Brillhart House in Miami showed that
 - A. its N-S elongation is not as effective as rotating it to an E-W elongation would be
 - B. passive operation (no heat or air-conditioning) leads to severe overheating
 - C. natural ventilation air speeds are too high
 - D. none of the above



13. When the HEED model for the Brillhart House in Miami compared passive performance to a/c
- indoor air temperatures for passive were much higher
 - air-conditioning was active when indoor air temperature was in the comfort zone
 - natural ventilation will not be effective at any time
 - all of the above
14. Michael Reynolds' earthships at the Greater World Earthship Community near Taos, NM,
- are made entirely of recycled materials and earth
 - use wind and sun to generate electricity
 - treat and reuse toilet water on site
 - all of the above
15. By using passive and low-energy techniques in design of the conservatory at Rio Grande Botanic Garden, Ed Mazria was able to
- achieve excellent growing conditions for both Mediterranean and Sonoran Desert plants
 - decrease costs to expand the building program
 - provide tolerable human comfort
 - all of the above
16. Village Homes is analogous to Richard Rogers' Chiswick Park development in that
- it features shared community space
 - it separates vehicular and pedestrian traffic
 - it provides on-site storm water retention/treatment
 - all of the above
17. Rafael Viñoy's Pittsburgh Convention Center saves a considerable amount of energy and money
- through daylighting strategies
 - via passive ventilation
 - from passive solar heating
 - all of the above except C
18. When designing a courtyard to cool its surrounding building, the most effective thing to do is
- use toldos to control the sun
 - add a large shade tree to its center
 - make sure it "sees" as much of the night sky as possible
 - all of the above
19. The most cost-effective way to meet design and energy challenges is
- to design elegant little big windows
 - to use curtain walls for maximum daylighting and solar gain
 - to use punched windows with horizontal shading devices on all façades
 - to use a double wall façade with BMS controlled shading



20. Lou Kahn's Kimbell Museum is a great example of employing little big windows
- for diffuse top-lighting
 - that allow sunlight to "come in through the cracks"
 - to "give the comforting feeling of knowing the time of day"
 - all of the above
21. The most advantageous feature of active solar buildings vs. passive solar buildings is
- the use of remote collectors
 - greatly increased efficiency
 - the ability to control timing of energy use
 - all of the above
22. An evacuated tube collector's advantage over a flat plate collector is
- greater efficiency in all climates
 - lower operating and maintenance expense
 - the use of phase change materials in the collector to store heat
 - all of the above
23. Henry Mayhew's active system in Coos Bay, OR,
- uses a reflective roof to increase efficiency
 - uses water-based collectors with a water storage tank
 - delivers conditioned air to the house via convection
 - all of the above
24. The Bevans house in nearby Genesee is an effective hybrid active system that
- uses rock bed heat storage to deliver conditioned air to the house
 - uses rock bed heat storage to deliver preheated air to the furnace
 - uses rock bed heat storage to store heat seasonally
 - all of the above
25. Large scale active systems have been designed to
- heat buildings
 - cool buildings
 - heat municipal swimming pools
 - all of the above
26. Helmut Jahn's State of Illinois Building in Chicago is notable as a successful
- passively heated building
 - actively heated building
 - ice-chilled building
 - none of the above
27. Building integrated PVs can act as
- windows
 - shading devices
 - roofs
 - all of the above



"We've been standing here talking about how to pitch to the batter for way too long, haven't we?"

28. PV system payback time has been significantly shortened
- A. by reduced first costs
 - B. increased efficiency
 - C. in areas where net metering is allowed
 - D. all of the above
29. Mixed-mode HVAC systems
- A. are only appropriate for mixed-use buildings
 - B. use both natural and forced ventilation
 - C. must use displacement ventilation
 - D. all of the above
30. In large buildings HVAC system efficiency can be increased by
- A. using economizer cooling
 - B. using energy wheels
 - C. both of the above
 - D. none of the above

